

REMARKS

Claim 1 has been amended to incorporate recitations of claims 7 and 11, and claim 21 has been amended to incorporate recitations of claims 24 and 28. Claims 7-11 and 24-28 have been canceled in view of the amendment of claims 1 and 21, respectively, and the dependency of other claims has been amended accordingly. Also, claim 36 has been amended in view of the amendment of claim 1. Claims 45 and 46 have been added based on the disclosure at, e.g., page 11, lines 11-12 in the present application.

Entry of the above amendment is respectfully requested.

Anticipation Rejection

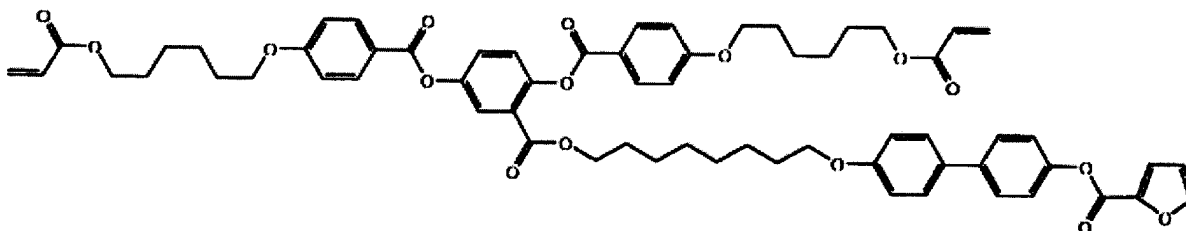
Claims 21 and 23-35 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6,733,690.

In response, Applicants note initially that claims 21 and 23-25 recite a compound having a transition temperature from the liquid crystalline phase to the isotropic phase of 20°C or lower.

In contrast, Applicants submit that there is no disclosure in US 6,733,690 wherein a compound having this transition temperature is described.

Also, example 3 of US 6,733,690 does not disclose or provide any hint that any of its three components show a transition temperature from the liquid crystalline phase to the isotropic phase at 20°C or lower.

Instead, the third compound



is described in column 24, line 43 to have a transition temperature from 103°C (here the wording transition temperature is named clearing point, Clp). The whole mixture is at room temperature in a liquid crystal phase. There is no disclosure provided that any compound or mixture of US 6,733,690 has such a low transition temperature.

Instead, Applicants submit that all disclosed compounds of US 6,733,690 have high transition temperatures.

These high transition temperatures are:

Example 1: 103°C, 89°C, 90.2°C, 114.7°C, 86°C, 130°C and 74°C

Example 2: 103°C, 145°C, 142°C, 133°C, 177°C

Also, the mixture described in column 29 has a transition temperature of 85°C.

Therefore, only very high transition temperatures are disclosed in US 6,733,690 for the single compounds and the mixtures, which are different from the low transition temperature of 20° or lower, which is claimed in the present invention.

Hence, Applicants submit that present claims 21 and 23 to 25 are different from US 6,733,690 and therefore novel over this reference. Accordingly, withdrawal of this rejection is respectfully requested.

Obviousness Rejection

Claims 1, 3-20 and 36-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,733,690.

In response, Applicants submit that US 6,733,690 describes compounds and mixtures having high transition temperatures.

This is in contrast to the present invention, wherein mixtures are described wherein compound b) has a transition temperature of 20°C or lower.

Applicants submit that it was a goal of the present invention to provide liquid crystalline mixtures which are doped by small amounts of certain additives for optimizing the mixture's orientation potential, such as the time needed for orienting, without major changes to the physical properties of the whole mixture such as depression of the transition temperature, the clearing point, or a reduction of the thermal liquid crystalline range, etc.

Further, Applicants submit that one of ordinary skill in the art who is looking to provide a liquid crystalline mixture which can be doped by certain additives without the aforementioned drawbacks would not have been motivated to use compounds having low transition temperatures, since one would expect that the liquid crystalline mixture comprising these compounds would have a significant depression of the transition temperature, which is not desired as described in US 6,733,690, in column 1, line 48.

According to the teaching of US 6,733,690, especially the examples, the compounds of US 6,733,690 have all high clearing points of at least 74°C and higher.

There is no hint provided in US 6,733,690 that liquid crystalline mixtures which do not have such depression of the clearing point can be accessed by doping the mixture with additives having a transition temperature of 20°C or lower.

Applicants submit that it was very surprisingly found in the present invention that with the novel additives the orientation property could significant be accelerated (see example 9 of the invention, on pages 57 to 60, wherein the orientation time of the doped mixture is 1 minute, whereas the non-doped mixture needs 15 minutes) and the aligning properties could significantly be enhanced as shown in example 10 of the invention.

This high orientation in only 1 minute was accessed by a novel and non-obvious mixture of the invention, wherein only 2% of the additive was present.

Applicants submit that this advantageous influence of low amounts of additives of the invention to a liquid crystal mixture could not have been foreseen starting from the teaching of US 6,733,690.

Hence, Applicants submit that the present invention is non-obvious over US 6,733,690, and withdrawal of this rejection is respectfully requested.

Rejection under 35 U.S.C. 112, First Paragraph

Claims 1, 3-21 and 23-44 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the examples 1-2, 4-5 and 8, allegedly does not reasonably provide enablement for the compounds represented by general formula (I) other than exemplified.

In response, Applicants submit that they have significantly specified the invention as recited in the amended claims by the compounds used in the mixture for accelerating the proceedings. Applicants submit that the scope is supported by the examples of the invention, wherein 16 different compounds are shown and comparison and application examples are given.

In addition, Applicants submit that there is no prior art which teaches the novel liquid crystal mixtures of the invention, and any further restriction would be an unjustified penalty for the inventors.

Hence, Applicants submit that the present invention is now in line with the requirements under 35 U.S.C. §112, first paragraph, and withdrawal of this rejection is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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